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Client Details

Firm Name

Generic Name

IP Sharing Device

one_port (no Dial-in function)

SP860A/B

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SP860A/B

IP Sharing Device

User's Guide

P/N: 9560650101

FCC Statement:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

CE Marking Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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SP860A/B

Chapter 1

1

Introduction

This Chapter provides an overview of the IP Sharing Device's features and capabilities.

Congratulations on the purchase of your new IP Sharing Device. The IP Sharing Device will allow multiple SOHO (Small Office Home Office) users to share an Internet user account. It provides a low-cost method of giving LAN users access to the vast resources available on the Internet.



Figure 1: Office to Internet

Once the IP Sharing Device is installed and configured, the Internet is just a click away. You can seamlessly connect to the Internet as if you had a permanent connection. The IP Sharing Device is able to use your modem to connect to your ISP (Internet Service Provider) and provide the required log-in information.

IP Sharing Device Features

The IP Sharing Device SP860A/B incorporates many advanced features, carefully designed to provide sophisticated functions while being easy to use.

LAN Features

- ***Hassle-free LAN Installation.*** An auto-sensing LAN connection eliminates the need for configuration during installation in a 10Base2 or 10BaseT network.
- ***DHCP Server Support.*** Dynamic Host Configuration Protocol provides a dynamic IP address to PCs and other devices upon request.
The IP Sharing Device can act as a **DHCP Server**.
- ***Multi Segment LAN Support.*** If you have a Router, PCs on other LAN segments can use the IP Sharing Device to access the Internet.

Internet Access Features

- ***Shared Internet Accounts.*** All users on the LAN can share Internet Accounts. You need only 1 account for each modem, not 1 account for each user.
- ***Dial-On-Demand & Auto-Disconnect.*** A connection is established to the Internet as required, and automatically disconnected when no longer needed. This reduces on-line charges to the minimum possible level.
- ***PPP Authentication.*** This is used to validate the log-on to your Internet Service Provider.

- ***User-Configurable Bandwidth Utilization.*** On multipoint models, users can choose “Time Saving Mode” for maximum performance or “Money Saving Mode” for lower costs.

Configuration & Management

- ***Easy Setup.*** Use your WEB browser from anywhere on the LAN for configuration.
- ***Remote Management.*** The IP Sharing Device can be managed from a workstation anywhere on the LAN, using a WEB browser.
- ***Remote Monitoring.*** The modem and Internet connection can be monitored from any workstation on the LAN.

Advanced Functions

- ***E-Mail Gateway.*** The IP Sharing Device can act as a Gateway for incoming E-Mail, allowing LAN users to share E-Mail accounts. Up to 4 accounts and 50 users are supported.
- ***Access Control Features.*** The LAN Administrator can limit Internet Access by individual workstations.
- ***Dial-in Remote Access.*** Remote users can dial the modem and use the IP Sharing Device to connect to the LAN and access LAN resources.

Security Features

- ***Configuration Data.*** Optional password protection is provided to prevent unauthorized users from modifying the configuration.

- ***Access Control Features.*** The LAN Administrator can limit Internet Access by individual workstations.
- ***Firewall Protection.*** All incoming data packets are monitored and all incoming server requests are filtered, thus protecting your network from malicious attacks from external sources.

Firewall Protection

The firewall protection provided by the IP Sharing Device is an intrinsic side effect of IP sharing. All users on the LAN share a single external IP address. From the external viewpoint, there is no network, only a single device.

For internal users, the IP Sharing Device acts as a “transparent proxy server”, translating the multiple internal IP addresses into a single external IP address.

For external requests, any attempt to connect to local resources are blocked. The IP Sharing Device will not “reverse translate” from a global IP address to a local IP address.

This type of “natural” firewall provides an impregnable barrier against malicious attacks.

Package Contents

The following items should be included:

- The IP Sharing Device Unit
- Power Adapter
- This User's Manual

If any of the above items are damaged or missing, please contact your dealer as soon as possible.

SP860A/B

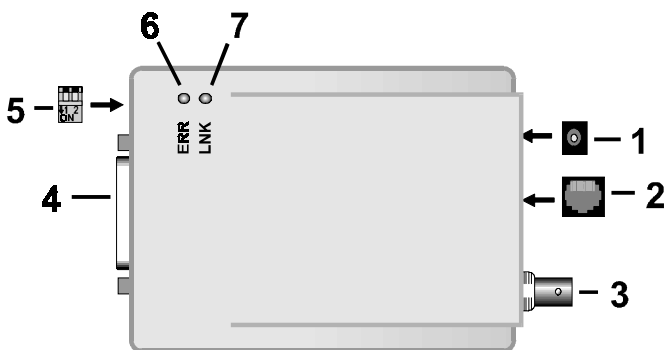
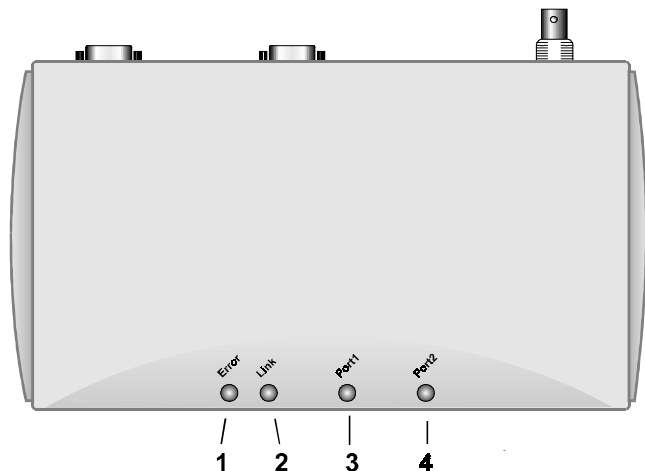


Figure 2: SP860A/B

Item	Description
1 Power port	Insert the power adapter plug here.
2 10BaseT port	Connect 10BaseT cabling here.
3 10Base2 port	Connect 10Base2 cabling here.
4 Serial Port	Connect the modem to this port.
5 DIP switches	Refer to the following <i>Dip Switches Table</i> .
6 Error LED	Indicates an error, but will normally light up during power On. See the <i>LED Status Table</i> for more details.
7 Link LED	This LED should be ON during normal operation. See the following <i>LED Status Table</i> for more details.

SP862B**Figure 3: SP862B****LED Indicators**

1	Error LED	This LED is used to indicate an error, but it will normally light up during power On. See the following <i>LED Status Table</i> for more details.
2	Link LED	This LED should be on during normal operation. For more information, see the following <i>LED Status Table</i> .
3, 4	Serial Port Indicators	These LEDs flash when the relevant port is in use.

See *Figure 5: Back Panel* on page 9 for connector details.

SP864B

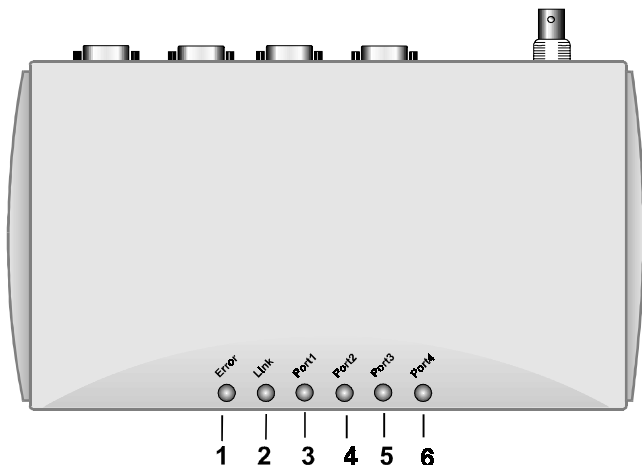


Figure 4: SP864B

LED Indicators

1	Error LED	This LED is used to indicate an error, but it will normally light up during power On. For more information, see the following <i>LED Status Table</i> .
2	Link LED	This LED should be on during normal operation. For more information, see the following <i>LED Status Table</i> .
3, 4 5, 6	Serial Port Indicators	These LEDs flash when the relevant port is in use.

See the following *Back Panel* diagram for connector details.

Back Panel (SP864B)

The following diagram shows the back panel of the. The is identical except for having 2 serial ports rather than 4.

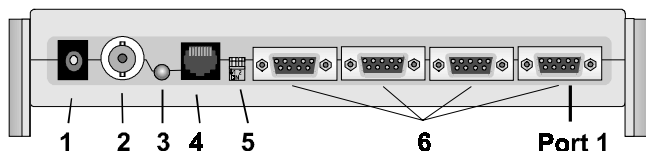


Figure 5: Back Panel (SP864B)





1	Power port	Connect the power adapter here.
2	10Base2 port	Connect 10Base2 cabling here.
3	10BaseT LED indicator.	This will light when the 10BaseT connector is in use.
4	10BaseT port	Connect 10BaseT cabling here.
5	DIP switches	Set Normal or Configuration mode. See the following <i>Dip Switches Table</i> for details.
6	Serial Ports	Connect the modems to these ports. The has 2 ports; the has 4 ports. Port 1, used for configuration, is closest to the side of the device.

LED Status Table

The following table details the operation of the *Link* and *Error* LEDs.

Link	Error	Description
On	On	During power On, both LEDs should light, then the Red LED should go off. If both LEDs stay on, there is a hardware problem.
On	Off	Power On Self Test OK.
Flashing	Off	Normal Operation (Receiving Packets from LAN).
Rapid intermittent flashing of each LED		Hardware error. Contact your dealer for technical support.

DIP Switches Table

DIP Switch Setting			Description
A		1=off 2=off	Normal Operation.
B		1=off 2=on	Normal Operation.
C		1=on 2=off	Restore Default IP Address and clear Password. (See next section)
D		1=on 2=on	Normal Operation.

Restore Default IP Address and Clear Password

If the IP Sharing Device's IP Address or password is lost, the following procedure can be used to recover from this situation.

1. Turn the power to the IP Sharing Device OFF.
2. Set the DIP switches to position C.
3. Turn the power to the IP Sharing Device ON.
4. Operate the DIP switches in the following sequence (you have 15 seconds to complete the sequence):
 - Set to A
 - Set to C
 - Set to A
5. The IP Sharing Device will now reset, and the Red LED flash. The following changes will have been made. (Other configuration data is unchanged.)
 - *IP Address* set to its default value of 192.168.0.1
 - *Network Mask* set to 255.255.255.0
 - The password cleared (no password).
6. You can now connect to the IP Sharing Device and make any configuration changes required.



Note! *If the DIP switches are simply left at position "C", the IP Sharing Device will function normally.*

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Chapter 2



Installation

This Chapter explains how to install the IP Sharing Device in your LAN.

Requirements

- Ethernet Network employing 10BaseT or 10Base2 cable and the TCP/IP protocol.
- External modem or ISDN TA (Terminal Adapter).
- Internet Access account with a local ISP (Internet Service Provider).

Procedure

1. Choose an Installation Site

Select a place on the network to install the IP Sharing Device. Remember that you need a phone jack and power outlets near your chosen location.

2. Connect Network Cable

The IP Sharing Device supports two types of network cables:

- Thin Ethernet (10Base2, BNC connector)
- Twisted Pair Ethernet (10BaseT, RJ-45 connector).

During power up, the unit automatically detects the type of network cable and adjusts to that environment. Simply connect the cable to the IP Sharing Device in the normal manner.



Do not connect both types of cable or change the network cable while the IP Sharing Device is powered On.

3. Connect Modem & Phone Line

Connect the modem, using a standard serial cable, to the IP Sharing Device's serial port. Connect the modem to the phone line.

4. Connect Power Adapter

Connect the modem's power adapter to the modem and the IP Sharing Device's power adapter to the IP Sharing Device. Power both devices On.



Only use the power adapter provided. Using a different one may cause hardware damage.

5. Check the LEDs

When the IP Sharing Device is powered On, both the Error and Link LEDs should light, then the Error LED should go off. The Link and Port LEDs will flash during normal operation.

If the Error LED stays on, there is a hardware problem. For more information on the LEDs, refer to the

Chapter 3



Configuration

This Chapter contains an overview of the configuration process.

IP Sharing Device Configuration

The required configuration depends on which features and functions of the IP Sharing Device you wish to use. Use the table below to locate detailed instructions for the required functions.

To Do this	Refer to
Provide Internet Access to all LAN users	Chapter 4: Internet Access
Configure for: <ul style="list-style-type: none">• A non-standard modem• Proprietary log-in with your ISP	Chapter 5: Advanced Port Settings
Change IP Sharing Device defaults: <ul style="list-style-type: none">• LAN settings• Bandwidth Utilization• Use the DHCP Server function	Chapter 6: Device Settings
Limit Internet Access by individual workstations	Chapter 7: Access Control

Provide Dial-in Access for some users (On multi port models)	Chapter 8: Dial-in access
Allow many users to share Internet E-Mail Accounts	Chapter 9: E-Mail
Configure the IP Sharing Device and routers for a LAN which has 1 or more routers.	Chapter 10: Routing
Check the IP Sharing Device's settings or operation: <ul style="list-style-type: none">• Device status• Port settings• Monitor the port while in use	Chapter 11: Status & Monitoring

Note!



Where use of a certain feature requires that PCs or other LAN devices be configured, this is also explained in the relevant chapter.

Configuration Program

The IP Sharing Device contains a HTTP server. This enables you to connect to it, and configure it, using your Web Browser.

Most Browsers should work, provided they support HTML tables and forms.

Preparation

Before attempting to configure the IP Sharing Device, please check the following:

- Since configuration uses the LAN connection, the IP Sharing Device must be installed on your LAN first, and powered ON.
- If the IP Sharing Device's default IP Address (192.168.0.1) is already used by another device, the other device must be turned OFF until the IP Sharing Device is allocated a new IP Address during configuration.
Refer to *LAN Settings* on page 41 for details on assigning a new IP Address to the IP Sharing Device.

Connecting to the IP Sharing Device

To establish a connection from your PC to the IP Sharing Device:

1. Start your WEB browser
2. In the *Address* box, enter "HTTP://" and the IP Address of the IP Sharing Device, as in the following example:

HTTP://192.168.0.1

3. You should then see the *Home* screen. Select the desired option from the navigation bar.

If you can't connect

If the IP Sharing Device does not respond, check the following:

- The IP Sharing Device is properly installed, LAN connections are OK, and it is powered ON.
- Ensure that your PC and the IP Sharing Device are on the same network segment. (If you don't have a router, this must be the case.)
- Ensure that your PC is using an IP Address within the range 192.168.0.2 to 192.168.0.254 and thus compatible with the IP Sharing Device's default IP Address of

192.168.0.1. Also, check that the *Network Mask* is set to 255.255.255.0

In Windows, the IP Address and Network Mask can be checked by using *Control Panel-Network* to check the *Properties* for the TCP/IP protocol.

Password

If a password has been set, you will be prompted for a password with the following dialog.

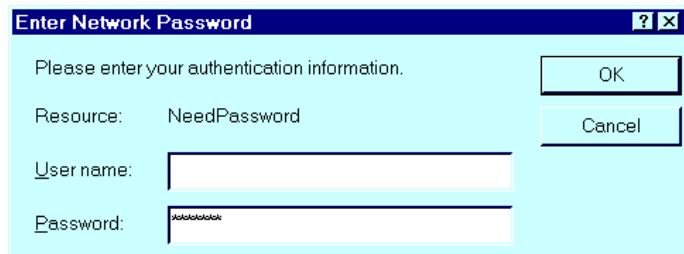


Figure 6: Password Dialog

Leave the *User Name* blank, and enter the current password.

If no password has been set, you will not see this screen, and will be taken immediately to the *Home* screen.

Navigation & Data Input

Most screens contain a navigation bar on the left of the screen allows you to move about. You can also use the "Back" button on your Browser.

Remember that changing to another screen without clicking "Save" does NOT save any changes you may have made.

HTML uses "forms based input" which means you must send (submit) the form (by clicking a button) or your data will be ignored.

Chapter 4



Internet Access

This Chapter explains how to configure the IP Sharing Device and your LAN for Internet Access.

Overview

To use the IP Sharing Device for Internet Access, the following operations are required:

- The IP Sharing Device's *Port* screen must be configured with details of the attached modem or ISDN TA, and the Internet Account to which the modem or ISDN TA will connect. Details are in this chapter.
- If you choose not to use the IP Sharing Device's default IP Address, the LAN settings on the *Device* screen must be set correctly. Refer to *LAN Settings* on page 41 for details.
- PC's on the LAN may require configuration, as explained in this chapter.
- If you have an existing DHCP (Dynamic Host Configuration Protocol) Server, it may require configuration. Details are in this chapter.
- If you have a router, its address needs to be entered in the IP Sharing Device. Refer to *LAN Settings* on page 41 for details.

Also, the router itself needs to be configured to use the IP Sharing Device as its "Default Route" to ensure that pack-

ets are forwarded to the Internet as needed. Check your Router's documentation to see how this is done.

Port Configuration

Selecting the **Port** hyperlink will take you to the **Port Configuration** screen. An example screen is shown below.

Port Configuration

Port 2 Get Data Status/Test Adv. Port

Click "Get Data" to see correct data for selected port.

Internet Account Details (from ISP)

Account (User) Name

Account Password

Verify Password

IP Address provided by ISP

DNS IP Address

Connect to this account by:

Dial-up Connection Details

Telephone (1)

Telephone (2) (Optional)

Telephone (3) (Optional)

Modem

Initial String ("Other" Modems only)

Retrieve Defaults Save Cancel

Figure 7: Port Configuration

Operations

- **To enter or change data:**
Type in, or select, the required data.
Click *Save* when finished.
- **To move to *Advanced Port* or *Port Status/Test* Screen:**
Click the appropriate link at the top of the screen.
Any changes you have made on this screen will NOT be saved.
- **To retrieve the default values:**
Click the *Get Defaults* button.
Note that this does NOT change the configuration; you must still use the *Save* button.
- **To have any Data entered ignored:**
Click the *Cancel* button. Changes since the last *Save* will be ignored. The previous data will reappear on screen.

Internet Connection Data

The following data is available from your ISP (Internet Service Provider).

Account (User) Name	Enter the account name provided by your ISP. This name will be used to log in to the ISP's server.
Account Password	Enter the current password for the above account.
Verify Password	Re-enter the password to ensure it is correct.
IP Address provided by ISP	Enter the IP address assigned to you by your ISP. If the ISP issues dynamic IP addresses, leave this field as 0.0.0.0. (With dynamic IP addresses, a valid address is provided upon connection.)
DNS IP Address	The DNS (Domain Name Server) translates names (e.g. micro-soft.com) to IP Addresses. Enter the DNS IP address supplied or recommended by your ISP.
Connect to this Account by	Select Dial up line if you connect by Modem or ISDN TA. Select Leased Line(Null modem) if you have a continuous connection. You can then ignore the <i>Dial-up Connection</i> section.

Dial-up Connection Details

If you are using a dial-up connection, the following data must also be provided.

Telephone	One (1) number is essential; the other 2 are optional. Use the format described in your modem's user manual.
Modem	If your Modem or ISDN TA is listed, simply select it. Otherwise, try <i>Hayes compatible</i> . If this does not work, select <i>Other</i> and enter the required "Initial String" (see below)

Initial String (AT Commands)

For the IP Sharing Device to function correctly, the modem or ISDN TA must be configured correctly. The table below shows the required settings, and the usual AT command.

Setting	AT Command
Fixed baud rate setting	AT&B1
RTS/CTS flow control	AT&K3
DCD to track the presence of a carrier	AT&C1
DTR off to hang-up modem	AT&D2
DSR always on	AT&S0
Modem to return modem-to-modem data link speed	ATX4

Using these commands, the *Initial String* would be as follows:

AT&F&B1&K3&C1&D2&S0X4

The first command (AT&F) sets the modem to its factory defaults. See *Appendix B - AT Commands* for further details.

PC Configuration

Simple LANs

If your PC is **NOT** using **DHCP** and your LAN does **NOT** contain a router, check the following TCP/IP settings:

- IP Address
- Network Mask
- Gateway IP Address
- DNS (Domain Name Server) Address

IP Address

Ensure that each PC has a unique IP Address from the same address range as the IP Sharing Device's *Device IP Address*. For example, if the IP Sharing Device uses the default IP Address (192.168.0.1) and Network Mask (255.255.255.0), the PCs must use addresses from 192.168.0.2 to 192.168.0.254.

Network Mask

All PCs, and the IP Sharing Device, must use the same value for the *Network Mask*. The default value is 255.255.255.0.

Gateway

Set the PC's *Default Gateway Address* to the IP Sharing Device's IP address (*Device IP Address*). The default IP Address for the IP Sharing Device is 192.168.0.1.

DNS (Domain Name Server) Address

This must match the DNS address entered into the *DNS IP Address* field of the IP Sharing Device during configuration.

If your PC is using DHCP

In this case, no configuration is required. The DHCP server will provide the following information when your PC (the DHCP client) boots up:

- IP Address & matching Network Mask
- Gateway IP Address
- DNS (Domain Name Server)

To check if your PC is using DHCP

Under Windows 95, you can check if your PC is acting as a DHCP client by using the following procedure. For other operating systems, check your system documentation.

1. Select *Control Panel ▶ Network*
2. Select the TCP/IP protocol for your network card.
3. Click *Properties-IP Address* to see the following screen.

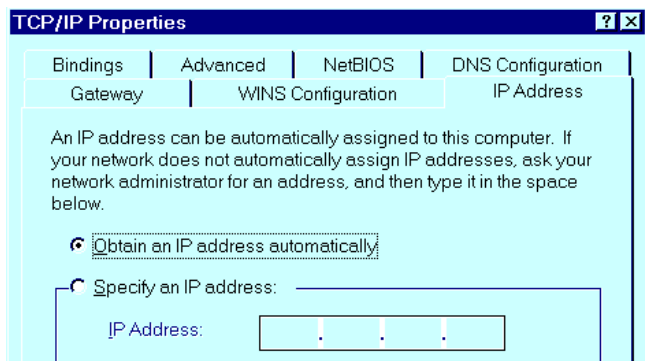


Figure 8: IP Address (Win 95)

4. If the radio button for "Obtain an IP address automatically" is checked, as shown above, then your PC is acting as a DHCP client.

DHCP Server Configuration

If you wish to use the DHCP Server in the IP Sharing Device, refer to DHCP Server on page 43. If you already have a DHCP Server, check the following:

IP Address

The IP Addresses assigned to PCs must be from the same address range as the IP Sharing Device's *Device IP Address*. For example, if the IP Sharing Device uses the default IP Address (192.168.0.1) and Network Mask (255.255.255.0), the PCs must use addresses from 192.168.0.2 to 192.168.0.254.

Network Mask

All PCs, and the IP Sharing Device, need to be using the same value for the *Network Mask*. The default value is 255.255.255.0.

Gateway

This depends on whether your LAN has a router:

- **No Router.** Set the *Default Gateway Address* to the IP address (*Device IP Address*) assigned to the IP Sharing Device during configuration. The default IP Address is 192.168.0.1.
- **Router.** Do not change the *Default Gateway Address*. Instead, configure the router to use the IP Sharing Device as its "Default Route".

DNS (Domain Name Server) Address

This must match the DNS address entered into the *DNS IP Address* field of the IP Sharing Device during configuration.

Router Configuration

If your LAN has a router, you must configure the router so that it passes all IP packets for devices not on the local LAN to the IP Sharing Device, so that they can be forwarded to the Internet.

This is achieved by configuring the Router so that it uses the IP Sharing Device as its "Default Route".

Check your Router documentation to see how this is done.

Operation - Internet Access

Simply use your Browser as if you had a permanent connection.

If no connection currently exists, there will be a short delay while the modem connects to your ISP.

Accessing AOL

To access AOL (America On Line) through the IP Sharing Device, the following items are necessary :

- Internet account with an ISP.
The details of this account must be entered in the IP Sharing Device like any other Internet Access Account, as explained in this chapter.
- Version 2.5, 3.0 or later of *AOL for Windows* communication software.
- The *AOL for Windows* software must be configured to use TCP/IP network access, rather than a dial-up connection. The configuration process is described below.

AOL for Windows Configuration

Ensure that the IP Sharing Device is configured first, then carry out the following procedure.

- Start the *AOL for Windows* communication software. Ensure that it is Version 2.5, 3.0 or later.
- Click the *Setup* button.
- Select *Create Location*, and change the location name from "New Locality" to "IP Sharing Device".
- Click *Edit Location*. Select *TCP/IP* for the *Network* field. (Leave the *Phone Number* blank.)
- Click *Save*, then *OK*.
Configuration is now complete.
- Before clicking "Sign On", always ensure that you are using the "IP Sharing Device" location.



Chapter 5

Advanced Port Settings

This Chapter details the settings on the IP Sharing Device's "Advanced Port Settings" screen.

Overview

Most users should not have to change these settings. They are provided for the following situations:

- You wish to temporarily disable the serial port, so that Internet access is not possible.
- Your modem uses non-standard AT commands.
- Your ISP does not use the standard PPP connection, and requires a special log-in procedure.
- You wish to change the "Time-out" period after which an inactive connection will be terminated.

Advanced Port Screen

The Advanced Port Screen is reached by clicking the *Adv. Port* button on the *Port Configuration* screen.

You will then see a screen like the example below.

Advanced Port Settings

Port Configuration **Port Status/Test**

Port Settings

Operation ☒ Enable ☐ Disable

Hang up after Idle Time minutes

Serial Line Speed bps

Modem/ISDN Settings

Dial Type ☒ Tone ☐ Pulse ☐ Other

Dial String ("Other" only)

"Auto-answer Off" command

Script File

```
wait 3000
send "\r"
wait 3000
sent 100 "CIS\r"
wait 3000 ":"
```

Figure 9: Advanced Port Settings

Port Settings

Operation	Use this to temporarily suspend operation, by selecting <i>Disable</i> .
Hang up after Idle Time	If a connection remains inactive, it is terminated after this time period. Allowable range is 0-99 minutes. For a leased line, set this value to 0.
Serial Line Speed	Select the speed which is equal to or below the fastest SERIAL line speed (NOT phone line speed) of your modem or ISDN TA. Available speeds range from 4.8K to 230.4.K (bps).

Modem/ISDN Settings

Dial Type	Select "Tone", "Pulse" or "Other" to match your system. For "Other", you must provide the <i>Dial String</i> below.
Dial String	Only required if you are NOT using Tone or Pulse dialing. Enter the command (sometimes called the "Dial Prefix String") your modem or ISDN TA requires to precede the phone number.
"Auto Answer Off" Command	Enter the command string which turns the "auto-answer" function in your modem or ISDN TA OFF.

Script File

If your ISP uses a standard PPP connection and authentication, you do NOT need a script file.

Script files are used to automate the log-in process for ISPs that use non-standard log-ins or proprietary security measures. For example, if you connect to the Internet via CompuServe, you DO need a script file.

Script File Commands

Three commands, listed below, can be used within a script file. Note the following points:

- Items in [] are optional, and the [] themselves are NOT used.
- Strings must be enclosed in double quotes.
- There must be spaces between commands and parameters (delay times and strings).

Send [msec] string	Send the characters in <i>string</i> , with a <i>msec</i> (milliseconds) delay between the sending of each character.
Wait msec	Wait for <i>msec</i> milliseconds before executing the next script line.
Wait [msec] string	Wait for <i>msec</i> milliseconds to receive the string. If the string is not received within the specified time, the connection is reset. If <i>msec</i> is not specified and the string is not received immediately, an error condition will arise.

Script File Variables

Eleven string variables can be used within the *string* above. These are used to include special characters within the string.

Variable	Description
\a	alert (normally creates a beep)
\b	backspace
\f	form feed
\n	new line
\r	carriage return
\t	horizontal tab
\v	vertical tab
\?	Literal question mark
\'	literal single quotation mark
\"	literal double quotation mark
\\	literal back slash

- Quote characters are special characters.
- Because each of these variables starts with a backslash, the backslash character (\) is also a special character.

As an example, to send the string "User Name" (including the quotes), the script file entry should be as follows:

```
send "\ "User Name\ "
```

CompuServe Script

The following script file could be used to log on to CompuServe, and can be used as an example for other situations.

```
wait 3000
send "\r"
wait 3000
send 100 "CIS\r"
wait 3000 ":"
send 100 "user id\r"
wait 3000
send 100 "password\r"
wait 60000 "!"
send 100 "GO PPPCONNECT\r"
```

Command	Explanation
wait 3000	Pause for 3 seconds
send "\r"	Send the carriage return character.
wait 3000	Pause for 3 seconds
send 100 "CIS\r"	Send the string "CIS", then a carriage return character. Pause for 100 ms between characters.
wait 3000 ":"	Wait for 3 seconds to receive the character ":" If not received in time, the connection is dropped.
send 100 "user id\r"	Send the string <i>user id</i> , where <i>user id</i> is your log-in name, then a carriage return. Pause for 100 ms between each character.
wait 3000	Pause for 3 seconds

send 100 " <i>password</i> \r"	Send the string <i>password</i> , where <i>password</i> is your password, then a carriage return. Pause for 100 ms between each character.
wait 60000 "!"	Wait for 60 seconds to receive the character "!". If not received in this time, the connection will be dropped.
Send 100 "GO PPPCONNECT\r"	Send the string "GO PPPCONNECT", then a carriage return character. Pause for 100 ms between each character. This command tells the server to switch to a PPP connection.

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Chapter 6



Device Settings

This Chapter details the options available on the "Device Settings" screen.

Overview

The *Device Settings* screen is reached by selecting the *Device* link on the navigation bar. An example screen is shown below.

Device Settings	
Device Password	
New password <input type="password" value="*****"/>	
Verify password <input type="password" value="*****"/>	
LAN	Device IP Address <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="0"/> <input type="text" value="1"/>
	Router IP Address <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
	Network Mask <input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="0"/>
DHCP Server	DHCP Server <input type="radio"/> Enable <input checked="" type="radio"/> Disable
	Start IP Address <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="0"/> <input type="text" value="11"/>
	Finish IP Address <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="0"/> <input type="text" value="60"/>
	DNS IP Address(1) <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
	DNS IP Address(2) <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
	DNS IP Address(3) <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
<input type="button" value="Retrieve Defaults"/> <input type="button" value="Save"/> <input type="button" value="Cancel"/>	

Figure 10: Device Settings Screen

Device Password

Once a password is entered, it is required in order to change the device configuration. Passwords are case sensitive and can be up to 8 alphanumeric characters (no spaces or punctuation).

To create or change the password, enter the required password in both the *New Password* and *Verify Password* input fields.



Note! *If the password is lost, a DIP switch setting is available to clear the password. See the DIP Switches Table on page 10 for details.*

LAN Settings

For most users, the default values for these fields should not need to be changed.

Device IP Address	<p>IP address for the IP Sharing Device.</p> <p>Use the default value of 192.168.0.1 unless:</p> <ul style="list-style-type: none"> • The address is already in use. • Your LAN is using a different IP address range (not 192.168.0.1 to 192.168.0.254). In this case, use an IP Address from within the address range used by your LAN.
Router IP Address	<p>If you have a router, enter its IP Address. Otherwise, leave this at 0.0.0.0.</p>
Network Mask	<p>The default value 255.255.255.0 is standard for small (class "C") networks.</p> <p>For other networks, enter the Network Mask value used by PCs on the same LAN segment as the IP Sharing Device.</p>



If you have a router, it is essential that the router pass all IP packets for devices not on the local LAN to the IP Sharing Device, so that they can be forwarded to the Internet.

This is done by configuring the router with the IP Sharing Device as its "Default Route". Check your Router documentation to see how this is done.

DHCP Server

A DHCP (Dynamic Host Configuration Protocol) server provides a valid IP address (and the Gateway and DNS addresses) to a DHCP client (PC or device) upon request. The IP Sharing Device can act as a **DHCP server**.

To use this feature:

- The IP Sharing Device must be configured with the following data.
- The PCs must be configured to act as DHCP **clients**. This procedure is explained in the next section.

Configuration Data

Enable/Disable	If Enabled, the IP Sharing Device will function as a DHCP server. The default value is Disabled.
Start IP Address Finish IP Address	The <i>IP Start Address</i> and <i>IP Finish Address</i> fields set the values used by the DHCP server. This range also determines the number of DHCP clients supported. (Maximum number of clients is 253.)
DNS IP Address	The IP Addresses provided by your ISP. Only 1 is essential. Multiple entries should be entered in the order you want them accessed. (The first available DNS will be used.)



The DNS field will display the DNS entered in the Port Configuration screen.

PC Configuration

To use DHCP, you must also configure your PCs to act as **DHCP clients**. Client support for DHCP is provided in Win 95's TCP/IP stack. The procedure for enabling this is detailed below.

For operating systems other than Win 95, check your system documentation.

Windows 95 DHCP Client Configuration

1. Select the *Control Panel - Network* option on the Start Menu. You should see a screen like the following.

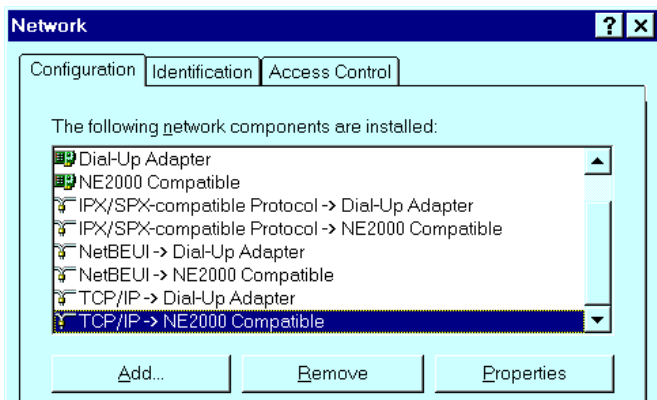


Figure 11: Network Configuration

2. Select the TCP/IP protocol for your network card. Then click on the *Properties* button, and the *IP Address* tab. You should then see a screen like the following.

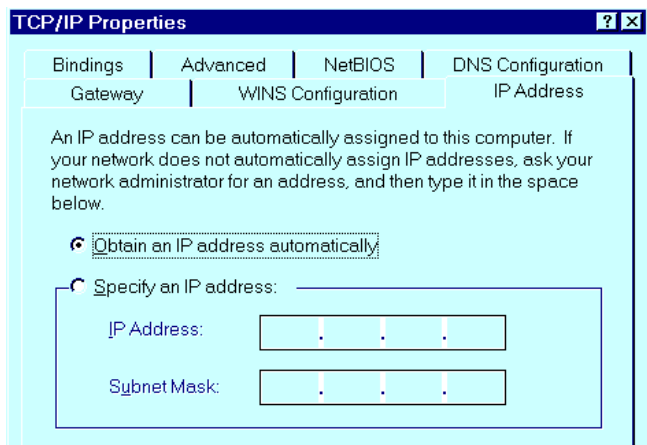


Figure 12: IP Address (Win 95)

3. Click on the radio button to obtain an IP address automatically, as shown above.
4. Click on the *Gateway* tab.
The *Default Gateway Address* should be left blank. The DHCP server will provide this information.
5. Click on the *DNS Configuration* tab
The DNS (Domain Name Server) should be “**Disabled**”.
The DHCP server will provide this information also.



Note!

- *Information provided by the DHCP Server will not be visible on this screen. Use the "Run" dialog to start the WinIPcfg program to see the addresses allocated by the DHCP Server.*
- *To reserve an IP Address for a particular DHCP client, so that it always receives the same IP Address, refer to Workstation Data on page 49.*

Chapter 7



Access Control

This Chapter explains how to configure and use the IP Sharing Device's "Access Control" feature.

Overview for SP861A

The optional *Access Control* feature allows administrators to:

- Restrict Internet Access by individual workstations.
- Reserve an IP Address for a particular workstation or network device.

If you DON'T need to reserve IP Addresses or restrict Internet Access, you can ignore the *Access Control* screen.

To apply these features to a particular workstation or network device, you need to know its *Network Adapter Address* (Hardware Address).

Access Control Screen

The *Access Control* screen is accessed from the hyperlink on the *Device Settings* screen. This screen allows you to:

- Identify individual workstations or devices on the LAN, by naming them and entering their *Network Adapter Address*.

- Reserve an IP Address for the workstation or network device, so that the DHCP Server in the IP Sharing Device always gives them the same IP Address (optional).
- Impose restrictions on the Internet Access enjoyed by the workstation (optional).

An example screen is shown below.

The screenshot shows a web-based interface titled "Access Control". Under the "Workstations" section, there is a "Name" drop-down menu currently showing "temp_staff", followed by "Get Data" and "Clear Form" buttons. Below this is a text instruction: "Click 'Get Data' to see correct data for selected item." The main form area contains several fields: "Workstation Name" (text box with "temp_staff"), "Network Adapter Address" (text box with "0000E864110C"), "Reserve entry in DHCP Table" (checkbox checked), "Reserved IP Address" (four text boxes containing "192", "168", "0", and "15"), and "Access Restrictions" (drop-down menu showing "Block all access"). At the bottom are five buttons: "Add", "Delete", "Update", "List All", and "Cancel".

Figure 13: Access Control Screen

Note that the *Name* drop-down box lists all Workstations previously entered. If none have been entered, this box will be empty.

Operations

- **To Add a New Workstation:**
Ignore the drop-down box, click the *Clear Form* button, and enter the Workstation details in the fields provided. Click *Add* when finished.
- **To Delete an Existing Workstation:**
Select the Workstation from the drop-down box, click *Get Details* to view the information and confirm that this is the correct Workstation, then click the *Delete* button.
- **To Change an Existing Workstation's Details:**
Select the Workstation from the drop-down box, click *Get Details* to view their information, then change any fields you wish.
Click *Update* when finished.
- **To Generate a List of all Workstations:**
Just click on the *List All* button.

Workstation Data

Workstation Name	Enter a name to identify this workstation.
Network Adapter Address	Hardware address for this workstation or LAN device. You can use the Windows "Winipcfg" program or your LAN management program to find this address.
Reserve entry in DHCP Table	<p>Check this if you wish to reserve an IP address for this workstation. This is useful if you have to provide the IP Address for other programs or users</p> <p>If this is left unchecked, the following entry can be ignored.</p>
Reserved IP Address	This relates to the entry above. Enter the reserved address here. This MUST be within the range used by the DHCP server (set on the "Device" screen).
Access Restrictions	<p>Select the desired level of access for this workstation. The available options are:</p> <ul style="list-style-type: none">• No restrictions• Block all access (No Internet Access)• E-Mail only

Overview for SP862B/864B

The Access Control feature allows administrators to restrict Internet Access by individual workstations. The process uses "Packet Filtering" to block or discard data packets. By default, no packets are blocked or discarded.

To use this feature:

- Set the desired restrictions on the "Everyone" group. By default, all PCs are in the "Everyone" group unless explicitly moved to another group, using the *Workstation* screen.
- Set the desired restrictions on the other groups ("Group 1", "Group 2", etc) as needed.
- For each Workstation you wish to move from the "Everyone" group, enter their details on the *Workstation* screen, and assign them to the desired group



Note! You can limit Internet access for ALL PCs without entering ANY workstation data. Simply apply the desired restrictions to the "Everyone" group.

It is also possible to define your own packet filters, and use these filters in addition to the pre-defined filters. Defining your own filters is optional.

Security Groups

The *Security Groups* screen is reached from the *Access Control* link on the navigation bar. An example screen is shown below.

Security Groups	
Group Everyone	<input type="button" value="Get Data"/> <input type="button" value="Clear Form"/>
Click "Get Data" to see correct data for selected group.	
Internet Access for this Group <ul style="list-style-type: none"> <input checked="" type="radio"/> No restrictions <input type="radio"/> Block all Access <input type="radio"/> Use Packet Filter Table below 	
Packet Filter Table Check items you wish to block (discard).	
Applications to Block <ul style="list-style-type: none"> <input type="checkbox"/> Archie <input type="checkbox"/> DNS <input type="checkbox"/> E-Mail <input type="checkbox"/> FTP <input type="checkbox"/> Gopher <input type="checkbox"/> News <input type="checkbox"/> SNMP <input type="checkbox"/> Telnet <input type="checkbox"/> TFTP <input type="checkbox"/> WWW 	TCP Packets to Discard <div> <input type="text"/> Select items to block. Created in "Administrator Defined Filters" </div> UDP Packets to Discard <div> <input type="text"/> Select items to block. Created in "Administrator Defined Filters" </div>

Figure 14: Security Groups Screen

Note that the Security groups are pre-named "Everyone", "Group 1", "Group 2", "Group 3", and "Group 4".

Operations

- To Define a Security Group:**
 Select the group from the drop-down box, then enter the

required data. If necessary, click *Clear Form* to remove the existing information shown on screen.

Click the *Save* button when finished.

- **To Change Access for an Existing Group:**
Select the group from the drop-down box, click *Get Details* to view their information, then change any fields you wish.
Click *Save* when finished.
- **To Assign Workstations to a Security Group**
All Workstations are automatically in the "Everyone" group. Use the *Workstations* screen to move them to another group if required.

Data

The following data is required.

Internet Access for this Group

There are 3 options:

- **No restrictions** - No packets are blocked. Use this to create an "Unlimited Access" group, or to temporarily remove restrictions from a group.
- **Block all Access** - Groups members cannot access the Internet at all. Use this to create the most restrictive group.
- **Use Packet Filter Table below** - Use this to define intermediate levels of access. Using the Packet Filter table gives you fine control over Internet access.

Packet Filter Table

Simply select the items you wish to block. You can choose from the pre-defined filters in the *Applications to Block* column,

or your own filters in the *TCP Packets to Discard* and *UPD Packets to Discard* column.

Applications to Block	Any items checked will be blocked. Users will not be able to use the application.
TCP Packets to Discard	<p>This lists any TCP filters you have defined on the <i>Administrator Defined Filters</i> screen. If no filters have been defined, this is empty.</p> <p>Multiple items can be selected (or deselected) by holding down the Ctrl key while selecting items.</p> <p>Selected items can NOT be accessed by members of this group.</p>
UPD Packets to Discard	<p>This lists any UDP filters you have defined on the <i>Administrator Defined Filters</i> screen. If no filters have been defined, this is empty.</p> <p>Multiple items can be selected (or deselected) by holding down the Ctrl key while selecting items.</p> <p>Selected items can NOT be accessed by members of this group.</p>

Note!



If you have not defined your own filters, but wish to do so, refer to "Administrator Defined Filters" on page 56.

Workstations

The *Workstations* screen is reached from the *Access Control* link on the navigation bar. An example screen is shown below.

The screenshot shows a web interface titled "Workstations". Below the title is a sub-header "Workstations" in blue. There is a dropdown menu for "Name" with "temp_staff" selected, and two buttons: "Get Data" and "Clear Form". Below these is a text instruction: "Click 'Get Data' to see correct data for selected item." The main form area contains several fields: "Workstation Name" (text box with "temp_staff"), "Network Adapter Address" (text box with "0000E812E00"), "Reserve entry in DHCP Table" (checkbox), "Reserved IP Address" (four text boxes with "0", "0", "0", "0"), and "Security Group" (dropdown menu with "Group 1" selected). At the bottom are five buttons: "Add", "Delete", "Update", "List All", and "Cancel".

Figure 15: Workstations Screen

Note that the drop-down box lists all Workstations previously entered. If none have been entered, this box will be empty.

Operations

- **To Add a New Workstation:**
Ignore the drop-down box, click the *Clear Form* button, and enter the Workstation details in the fields provided. Click *Add* when finished.
- **To Delete an Existing Workstation:**
Select the Workstation from the drop-down box, click *Get Details* to view the information and confirm that this is the correct Workstation, then click the *Delete* button.

- **To Change an Existing Workstation's Details:**
Select the Workstation from the drop-down box, click *Get Details* to view their information, then change any fields you wish.
Click *Update* when finished.
- **To Generate a List of all Workstations:**
Just click on the *List All* button.

Data

Workstation Name	Enter a name to identify this workstation.
Network Adapter Address	Hardware address for this workstation. You can use the Windows "Winipcfg" program or your LAN management program to find this address.
Reserve entry in DHCP Table	Check this if you wish to reserve an IP address for this workstation. This is useful if you have to provide the IP Address for other programs or users If this is left unchecked, the following entry can be ignored.
Reserved IP Address	This relates to the entry above. Enter the reserved address here. This MUST be within the range used by the DHCP server (set on the "Device" screen).

Security Group	Select the security group for this workstation. If you only wish to reserve an IP Address, and are not using the security (access control) features, simply leave this at "Everyone".
-----------------------	---

Administrator Defined Filters

The *Administrator Defined Filters* screen is reached from the *Access Control* link on the navigation bar. An example screen is shown below.

Administrator Defined Filters

Create filters by defining packets to be **Filtered Out**.

TCP Packets		UDP Packets	
Name	Port No.	Name	Port No.
WWW	80	DNS	53
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Figure 16: Administrator Defined Filters

This screen allows you to define packet filters. After you define packet filters, they will appear on the "Security Groups" screen. You can select them, as well as the pre-defined filters, when applying restrictions to a Security Group.

Data

TCP Packets

Define the packets you wish to be filtered out, by entering the following data.

Name	Enter a descriptive name for this entry.
Port No.	Enter an integer representing the Port Number for this type of packet. A Network Analyzer or Packet Sniffer can be used to determine the correct port number.

UDP Packets

Define the packets you wish to be filtered out, by entering the following data.

Name	Enter a descriptive name for this entry.
Port No.	Enter an integer representing the Port Number for this type of packet. A Network Analyzer or Packet Sniffer can be used to determine the correct port number.

Overview for SP862B/864B

The Access Control feature allows administrators to restrict Internet Access by individual workstations. The process uses "Packet Filtering" to block or discard data packets. By default, no packets are blocked or discarded.

To use this feature:

- Set the desired restrictions on the "Everyone" group. By default, all PCs are in the "Everyone" group unless explicitly moved to another group, using the *Workstation* screen.
- Set the desired restrictions on the other groups ("Group 1", "Group 2", etc) as needed.
- For each Workstation you wish to move from the "Everyone" group, enter their details on the *Workstation* screen, and assign them to the desired group



You can limit Internet access for ALL PCs without entering ANY workstation data. Simply apply the desired restrictions to the "Everyone" group.

It is also possible to define your own packet filters, and use these filters in addition to the pre-defined filters. Defining your own filters is optional.

Security Groups

The *Security Groups* screen is reached from the *Access Control* link on the navigation bar. An example screen is shown below.

Security Groups	
Group Everyone	<input type="button" value="Get Data"/> <input type="button" value="Clear Form"/>
Click "Get Data" to see correct data for selected group.	
Internet Access for this Group <ul style="list-style-type: none"> <input checked="" type="radio"/> No restrictions <input type="radio"/> Block all Access <input type="radio"/> Use Packet Filter Table below 	
Packet Filter Table Check items you wish to block (discard).	
Applications to Block <ul style="list-style-type: none"> <input type="checkbox"/> Archie <input type="checkbox"/> DNS <input type="checkbox"/> E-Mail <input type="checkbox"/> FTP <input type="checkbox"/> Gopher <input type="checkbox"/> News <input type="checkbox"/> SNMP <input type="checkbox"/> Telnet <input type="checkbox"/> TFTP <input type="checkbox"/> WWW 	TCP Packets to Discard <div> <input type="text"/> Select items to block. Created in "Administrator Defined Filters" </div> UDP Packets to Discard <div> <input type="text"/> Select items to block. Created in "Administrator Defined Filters" </div>

Figure 17: Security Groups Screen

Note that the Security groups are pre-named "Everyone", "Group 1", "Group 2", "Group 3", and "Group 4".

Operations

- To Define a Security Group:**
 Select the group from the drop-down box, then enter the

required data. If necessary, click *Clear Form* to remove the existing information shown on screen.
Click the *Save* button when finished.

- **To Change Access for an Existing Group:**
Select the group from the drop-down box, click *Get Details* to view their information, then change any fields you wish.
Click *Save* when finished.
- **To Assign Workstations to a Security Group**
All Workstations are automatically in the "Everyone" group. Use the *Workstations* screen to move them to another group if required.

Data

The following data is required.

Internet Access for this Group

There are 3 options:

- **No restrictions** - No packets are blocked. Use this to create an "Unlimited Access" group, or to temporarily remove restrictions from a group.
- **Block all Access** - Groups members cannot access the Internet at all. Use this to create the most restrictive group.
- **Use Packet Filter Table below** - Use this to define intermediate levels of access. Using the Packet Filter table gives you fine control over Internet access.

Packet Filter Table

Simply select the items you wish to block. You can choose from the pre-defined filters in the *Applications to Block* column,

or your own filters in the *TCP Packets to Discard* and *UPD Packets to Discard* column.

Applications to Block	Any items checked will be blocked. Users will not be able to use the application.
TCP Packets to Discard	<p>This lists any TCP filters you have defined on the <i>Administrator Defined Filters</i> screen. If no filters have been defined, this is empty.</p> <p>Multiple items can be selected (or deselected) by holding down the Ctrl key while selecting items.</p> <p>Selected items can NOT be accessed by members of this group.</p>
UPD Packets to Discard	<p>This lists any UDP filters you have defined on the <i>Administrator Defined Filters</i> screen. If no filters have been defined, this is empty.</p> <p>Multiple items can be selected (or deselected) by holding down the Ctrl key while selecting items.</p> <p>Selected items can NOT be accessed by members of this group.</p>

Note!



If you have not defined your own filters, but wish to do so, refer to "Administrator Defined Filters" on page 56.

Workstations

The *Workstations* screen is reached from the *Access Control* link on the navigation bar. An example screen is shown below.

The screenshot shows a web interface titled "Workstations". Below the title is a sub-header "Workstations" in blue. There is a dropdown menu labeled "Name" with "temp_staff" selected, and two buttons: "Get Data" and "Clear Form". Below these is a text instruction: "Click 'Get Data' to see correct data for selected item." The main form area contains several fields: "Workstation Name" with a text box containing "temp_staff", "Network Adapter Address" with a text box containing "0000E812E00", "Reserve entry in DHCP Table" with an unchecked checkbox, "Reserved IP Address" with four text boxes each containing "0", and "Security Group" with a dropdown menu showing "Group 1". At the bottom are five buttons: "Add", "Delete", "Update", "List All", and "Cancel".

Figure 18: Workstations Screen

Note that the drop-down box lists all Workstations previously entered. If none have been entered, this box will be empty.

Operations

- **To Add a New Workstation:**
Ignore the drop-down box, click the *Clear Form* button, and enter the Workstation details in the fields provided. Click *Add* when finished.
- **To Delete an Existing Workstation:**
Select the Workstation from the drop-down box, click *Get Details* to view the information and confirm that this is the correct Workstation, then click the *Delete* button.

- **To Change an Existing Workstation's Details:**
Select the Workstation from the drop-down box, click *Get Details* to view their information, then change any fields you wish.
Click *Update* when finished.
- **To Generate a List of all Workstations:**
Just click on the *List All* button.

Data

Workstation Name	Enter a name to identify this workstation.
Network Adapter Address	Hardware address for this workstation. You can use the Windows "Winipcfg" program or your LAN management program to find this address.
Reserve entry in DHCP Table	Check this if you wish to reserve an IP address for this workstation. This is useful if you have to provide the IP Address for other programs or users If this is left unchecked, the following entry can be ignored.
Reserved IP Address	This relates to the entry above. Enter the reserved address here. This MUST be within the range used by the DHCP server (set on the "Device" screen).

Security Group	Select the security group for this workstation. If you only wish to reserve an IP Address, and are not using the security (access control) features, simply leave this at "Everyone".
-----------------------	---

Administrator Defined Filters

The *Administrator Defined Filters* screen is reached from the *Access Control* link on the navigation bar. An example screen is shown below.

Administrator Defined Filters

Create filters by defining packets to be **Filtered Out**.

TCP Packets		UDP Packets	
Name	Port No.	Name	Port No.
WWW	80	DNS	53
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Figure 19: Administrator Defined Filters

This screen allows you to define packet filters. After you define packet filters, they will appear on the "Security Groups" screen. You can select them, as well as the pre-defined filters, when applying restrictions to a Security Group.

Data

TCP Packets

Define the packets you wish to be filtered out, by entering the following data.

Name	Enter a descriptive name for this entry.
Port No.	Enter an integer representing the Port Number for this type of packet. A Network Analyzer or Packet Sniffer can be used to determine the correct port number.

UDP Packets

Define the packets you wish to be filtered out, by entering the following data.

Name	Enter a descriptive name for this entry.
Port No.	Enter an integer representing the Port Number for this type of packet. A Network Analyzer or Packet Sniffer can be used to determine the correct port number.

Chapter 8

Dial-In Access

This Chapter details the operation of the IP Sharing Device's Dial-in feature.

Overview for SP862B/864B

The IP Sharing Device's dial-in feature allows remote users to:

- Dial the modem connected to the IP Sharing Device, using the same PPP communication software (e.g. *Dial-up Networking*) that they use for dial-in Internet access.
- Have their user name and password verified by the IP Sharing Device.
- Access the LAN resources as if they were a local user.

For additional security, the dial-back function can be used. In this situation, the IP Sharing Device will hang-up the user's incoming connection, and then call them back.

To use the Dial-in Feature:

- The relevant port must be configured for dial-in operation. The required settings are on the *Advanced Port Settings* screen.
- User data must be entered on the *Users* screen for each person requiring dial-in access.



Note!

If you wish, you can reserve a port for dial-in access by enabling "Dial-in" and dis-

abling "Internet Access".

Port Configuration for Dial-In

To use dial-in access, the relevant port must have the following data entered on the *Advanced Port Settings* screen. This screen is reached by the *Adv. Port* button on the *Port Configuration* screen.

Dial-in	If checked, this port is available for dial-in access. Otherwise, any attempt to dial-in will be blocked.
Idle Timeout	If a dial-in connection remains inactive, it is terminated after this time period. Allowable range is 0-99 minutes.
Dial-in PPP Link	Select the desired option. CHAP is more secure. If it is selected, the dial-in clients must also support CHAP in order to connect. PAP is less secure, but more common. Warning! If you choose "None", no User Name/Password authentication is performed on dial-in

User Configuration for Dial-in

The *Users* screen contains data for both Dial-in access and/or E-Mail Account sharing.

To enter information about the users who wish to have dial-in access:

- Select *Dial-in* from the navigation bar, then *Users*.
- You will then see a screen like the following:

Users

User Name **jim**

Click "Get Data" to see correct data for selected user.

General

Name

Password

Verify Password

E-Mail

Share Mail A/c ☒

Mail Account

Recipient for unrouted mail ☒

Dial-in

Enable for this user ☒

Call back: ☐ Disabled ☐ Roaming ☒ Fixed - Telephone No.

Connect time limit min

Figure 20: Users Screen

Note that existing users are listed in a drop-down box. If no users have been entered, this box will be empty.

This screen is also used provide user information for "E-Mail Account Sharing". For Dial-in use only, simply ignore the "E-Mail" section of the screen.

Operations

- **To Delete an Existing User:**
Select the user from the drop-down box, click *Get Details* to view their information and confirm that this is the correct user, then click the *Delete* button.
- **To Change an Existing User's Details:**
Select the user from the drop-down box, click *Get Details* to view their information, then change any fields you wish. Click *Update* when finished.
- **To Add a New User:**
Ignore the drop-down box, click the *Clear Form* button, and enter the user details in the fields provided. Click *Add* when finished.
- **To Generate a List of all Users:**
Just click on the *List All* button.

User Data

For each user requiring Dial-in access, the following data is required.

General

User Name	<p>Existing users are shown in a drop-down list. You can select a user from this list to change their details.</p> <p>When adding a new user, the drop-down list is ignored; just enter the details for the new user.</p> <p>Note the limitations on user names:</p> <ul style="list-style-type: none">• Multiple words are NOT allowed• Punctuation and special characters should NOT be used.• User names are case insensitive (case is ignored).
Password	<p>The password for the current user. Passwords are case sensitive.</p>

Dial-in

Enable for this user	Use this to suspend or enable dial-in access.
Call Back	<p>Disabled:- User can simply dial-in; the device will not hang-up and call back.</p> <p>Roaming:- After providing their name and password, the user is prompted for the call-back number.</p> <p>Fixed:- The number entered in the Tel field is always used as the call-back number.</p>
Connect Time limit	After this time period, the user is disconnected. Allowable values are 0 (default) to 999 minutes. Zero means no time limit.

Remote User Configuration

The remote user can use the same dial-up software they use for Internet access. They should check the following:

- Their program must dial the telephone number of the modem connected to the port used for dial-in access.
- When prompted for user name and password, they must enter the name and password stored in the IP Sharing Device.

Once connected, they can access LAN resources as they normally would. They will appear to other LAN devices as a normal PC on the LAN, using the IP Address allocated by the IP Sharing Device.

Chapter 9



E-Mail

*This Chapter the use of the E-Mail Account
Sharing feature of the IP Sharing Device.*

Overview

The IP Sharing Device allows many users to share the E-Mail Account(s) provided by your ISP. Up to 4 E-Mail accounts and 50 users are supported. The E-mail address is formed by combining the "User id" and the "Account name", as shown below. Note that the quotes (" ") and braces (< >) ARE included in the E-mail address.

"user_name"<mail_account@mail_address>

e.g.

"jim"<sales@company.com>

To use this feature:

- Account data must be entered into the IP Sharing Device's *E-Mail Account* screen for each E-Mail account you wish to share.
- Data for each user who wishes to share an E-Mail Account must be entered in the IP Sharing Device's *Users* screen
- A *DNS IP Address* must be entered either on the *Port Configuration* screen or on the *Device* screen.
- Users must configure their E-Mail program so that their incoming mail is retrieved through the IP Sharing Device, and that other people know their E-Mail address.

Each of these operations is described in the following section.

Account Information

To enter data about the E-Mail accounts you wish to share, select *E-Mail - E-Mail Accounts* from the navigation bar. You will then see a screen like the following:

E-Mail Accounts

Account No. 1 Get Data Clear Form

Click "Get Data" to see correct data for selected account.

Mail Account
 ("Users" screen assigns users to accounts)
 Enable Sharing ☒

POP3 Mail Server

Server Address

Account Name

Password

Verify Password

Save Test Cancel

Figure 21: E-Mail Accounts Screen

Account No.	Select the desired account (1..4) Click <i>Get Data</i> to see existing data. Click <i>Clear Form</i> to prepare the form for a new entry.
Enable Sharing	This must be checked to allow sharing of the selected account.

POP3 Mail Server Address	Enter the address of the POP3 Mail Server, as provided by your ISP.
POP3 Mail Server Account Name	This name is provided by your ISP. Using a Department name (e.g. Sales) is recommended.
Password	The password for the above account.

User Information

To enter information about the users who wish to share E-Mail accounts, select *E-Mail* from the navigation bar, then *Users*. You will then see a screen like the following:

The screenshot shows a web interface titled "Mail Users". At the top, there is a "User Name" dropdown menu set to "None", and two buttons: "Get Data" and "Clear Form". Below this, a text instruction reads: "Click 'Get Data' to see correct data for selected user." The interface is divided into two sections: "General" and "E-Mail". Under "General", there are three input fields: "Name" with the value "james", "Password" with "*****", and "Verify Password" with "*****". Under "E-Mail", there is a "Mail Account" dropdown menu set to "1) SerComm" and a checkbox labeled "Recipient for unrouted mail" which is checked. At the bottom, there are five buttons: "Add", "Delete", "Update", "List All", and "Cancel".

Figure 22: Mail Users Screen

Note that existing users are listed in a drop-down box. If no users have been entered, this box will be empty. Ignore this drop-down list when adding a new user.

Operations

- **To Delete an Existing User:**
Select the user from the drop-down box, click *Get Details* to view their information and confirm that this is the correct user, then click the *Delete* button.
- **To Change an Existing User's Details:**
Select the user from the drop-down box, click *Get Details* to view their information, then change any fields you wish. Click *Update* when finished.
- **To Add a New User:**
Ignore the drop-down box, click the *Clear Form* button, and enter the user details in the fields provided. Click *Add* when finished.
- **To Generate a List of all Users:**
Just click on the *List All* button.

User Data

For each user wishing to share an E-Mail account, the following data is required.

General

User Name	When adding new users, ignore the drop-down list, and enter the new name here. Note the limitations on user names: <ul style="list-style-type: none">• Multiple words are NOT allowed
------------------	---

	<ul style="list-style-type: none">• Punctuation and special characters should NOT be used.• User names are case insensitive (case is ignored).
Password	The password for the current user. This password will be entered into their E-Mail program. Passwords are case sensitive.

E-Mail

Mail Account	Select the E-Mail account that this user is going to share. Account information should have been previously entered.
Set as Recipient for Unrouted Mail	If this setting is ON (Checked), then when this user retrieves their E-mail, they will also receive all E-mail sent to this mail account when there is no user name, or the user name is invalid. More than one user can be set.

DNS Address

A DNS (Domain Name Server) Address is required to enable the IP Sharing Device to locate the Mail Server.

This address is on the *Port Configuration* screen and on the *Device* screen.

Ensure that the DNS Address has been entered.

E-Mail Program Configuration

Each user wishing to share an E-Mail account must configure their E-Mail program with the following data.

Name	The <i>User Name</i> entered in the <i>E-Mail User</i> Screen of the IP Sharing Device.
E-Mail Address	The full name of the E-Mail account which is being shared, as provided by your ISP. e.g. sales@provider.com
SMTP Server (Outgoing Mail)	The SMTP Server address as provided by your ISP
POP3 Server (Incoming Mail)	Set this to the IP Address of the IP Sharing Device
POP3 Account	The <i>User Name</i> entered in the <i>E-Mail User</i> Screen of the IP Sharing Device.
Password	The user password entered in the <i>User</i> screen of the IP Sharing Device.

- Note that outgoing E-mail is sent normally; only incoming E-mail is processed by the IP Sharing Device.
- If some of your incoming E-mail does not include your name, and thus becomes "Unrouted Mail", ask those senders to record your E-Mail Address in the following format. Note that quotes (" ") and braces (< >) ARE typed in.

"user_name"<mail_account@mail_address>

e.g.

"jim"<sales@company.com>

Your printed E-Mail Address (e.g. on your business card) should also show your E-Mail address in the format above.

Sharing E-Mail Example

Say your name was B. Jones, the IP Sharing Device uses its default IP Address (192.168.0.1) and other information was as follows:

E-Mail Address as provided by your ISP	greatco@ms02.com
SMTP Server as provided by your ISP	smtp09.com
POP3 Server as provided by your ISP	ms02.com
POP3 Account Name as provided by your ISP	greatco
POP3 Account password as provided by your ISP	9087654

To share this E Mail Account, the entries on the following page would have to be made. Your E-Mail Address would become:

"bjones"<greatco@ms02.com>

IP Sharing Device "Mail Account"

Account No.	1
Enable Sharing	ON (Yes)
POP3 Mail Server Address	ms02.com
POP3 Mail Server Account Name	greatco
Password	9087654

IP Sharing Device "Mail User"

User Name	bjones
Password	Secret064
Mail Account	1
Set as Recipient for Unrouted Mail	ON (Yes)

E-Mail Program

Name	bjones
E-Mail Address	greatco@ms02.com
SMTP Server (Outgoing Mail)	smtp09.com
POP3 Server (Incoming Mail)	192.168.0.1
POP3 Account	bjones
Password	Secret064

Management of Shared E-Mail

This section describes some common operations which may be required at some time.

Changing User Details

You can change any data at any time. For example, to move a user from 1 account to another:

- Navigate to the *Users* screen.
- Select the desired user, and click *Get Data* to view their information.
- Select the desired account for this user.
- Click *Update*



Note! Any mail sent to this user at their "old" account will now be considered "unrouted mail".

You can modify any user data in a similar fashion.

Deleting a User

To delete a user from the database:

- Navigate to the *Users* screen.
- Select the desired user.
- Click *Delete* to remove them from the database.



Note! Any mail sent to this user will now be considered "unrouted mail".

Retrieving ALL Mail

If you wish to retrieve all mail for the shared account, regardless of who it is addressed to:

- Run your E-Mail program, and navigate to the screen showing the details of the shared E-Mail account.
- Modify the account configuration so that the following fields match the data provided by your ISP:
 - POP3 account
 - POP3 Server address
 - Account password
- The other configuration data is already correct.

When you retrieve your mail with these settings, you will receive all the E-mail sent to this account.

Stop Sharing the Account

If you wish to cease sharing this account:

- On the *E-Mail Accounts* screen, set *Enable Sharing* for this account OFF.
- To retrieve mail from this account, you will now have to configure your E-Mail program to access the account directly, as described above.
- You will receive all mail intended for users who have been sharing this account.
- Users who previously used this account need to configure their E-Mail programs to use a different account.

Chapter 10

Routing

This Chapter explains the Routing features of the IP Sharing Device.

Overview

While the IP Sharing Device includes a standard routing table, this feature can be completely ignored if you do not have a router in your LAN.

If you DO have a router, it is necessary to configure BOTH the Router and the Routing table in the IP Sharing Device correctly, as described in the following sections.



Note!

See page 88 for an example of configuring both the IP Sharing Device and the Router.

IP Sharing Device Configuration

The routing table is accessed by the *Routing* link on the navigation bar. This link appears only on the *Device Screen*. An example screen is shown below.

Routing

Existing Entries in Routing Table

Routing Table

Destination IP Address

Network Mask

Gateway IP Address

Metric

Figure 23: Routing Screen

Routing Table Data

An entry in the routing table is required for each LAN segment on your Network, other than the segment to which this device is attached. The data in the Routing Table is as follows.

Destination IP Address	The network address of the remote LAN segment. For standard class "C" LANs, the network address is the first 3 fields of this <i>Destination IP Address</i> . The 4 th (last) field can be left at 0.
Network Mask	The Network Mask used on the remote LAN segment. For class "C" networks, the standard Network Mask is 255.255.255.0

Gateway IP Address	The IP Address of the Router on the LAN segment to which this device is attached. (NOT the router on the remote LAN segment.)
Metric	The number routers which must be navigated to reach the remote LAN segment. The default value is 1.



Routing tables normally have an "Interface" field. Here, all entries are for the LAN Interface, so this field is absent.

Router Configuration

It is essential that all IP packets for devices not on the local LAN be passed to the IP Sharing Device, so that they can be forwarded to the Internet. To achieve this, the Routers must be configured to use the IP Sharing Device as the *Default Route* or *Default Gateway*.

Local Router

The local router is the Router installed on the same LAN segment as the IP Sharing Device. This router requires that the *Default Route* is the IP Sharing Device itself. Typically, routers have a special entry for the *Default Route*. It should be configured as follows.

Destination IP Address	Normally 0.0.0.0, but check your router documentation.
Network Mask	Normally 0.0.0.0, but check your router documentation.
Gateway IP Address	The IP Address of the IP Sharing Device.
Metric	1

Other Routers

Other routers must use the IP Sharing Device's *Local Router* as the *Default Route*. The entries will be the same as the IP Sharing Device's local router, with the exception of the *Gateway IP Address*.

- For a router with a direct connection to the IP Sharing Device's local Router, the *Gateway IP Address* is the address of the IP Sharing Device's local router.
- For routers which must forward packets to another router before reaching the IP Sharing Device's local router, the *Gateway IP Address* is the address of the intermediate router.

Routing Example

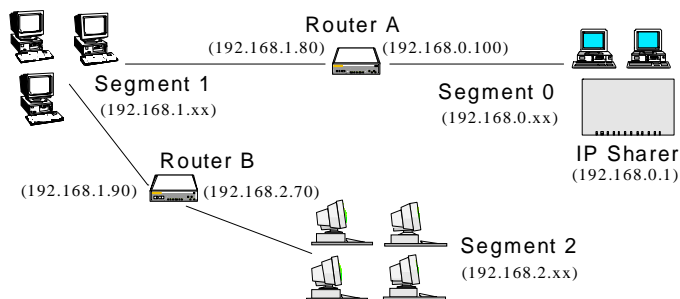


Figure 24: Routing Example

For the LAN shown above, with 2 routers and 3 LAN segments, the required entries would be as follows.

For the IP Sharing Device's Routing Table

The IP Sharing Device requires 2 entries as follows.

Entry 1 (Segment 1)	
Destination IP Address	192.168.1.0
Network Mask	255.255.255.0 (Standard Class C)
Gateway IP Address	192.168.0.100 (IP Sharing Device's local Router)
Entry 2 (Segment 2)	
Destination IP Address	192.168.2.0
Network Mask	255.255.255.0
Gateway IP Address	192.168.0.100

For Router A's Default Route

Destination IP Address	0.0.0.0
Network Mask	0.0.0.0
Gateway IP Address	192.168.0.1 (IP Sharing Device's IP Address)

For Router B's Default Route

Destination IP Address	0.0.0.0
Network Mask	0.0.0.0
Gateway IP Address	192.168.1.80 (IP Sharing Device's local router)

Chapter 11



Status & Monitoring

This Chapter explains the Status and Monitoring features of the IP Sharing Device.

Overview

The IP Sharing Device allows you to connect to it through the LAN while it is operating, and view the device status, and monitor the operation of each port.

Status Screen

The **Status** screen can be reached with the hyperlink on the navigation bar. An example screen is shown below.

Status		
System		
Firmware Version	Version 5.1 Release 01	
Physical Address	00-c0-02-90-74-23	
Hardware ID	041010344421	
LAN		
I.P. Address	192.168.0.1	
Network Mask	255.255.255.0	
Router I.P. Address	0.0.0.0	
DHCP	Enable	
E-mail Sharing	OFF	
Port	Enable	
DHCP Table		
I.P. Address	Physical Address	Status
192.168.0.4	00-00-e8-23-e0-e5	leased
192.168.0.10	00-c0-a8-35-dd-f3	leased
<input type="button" value="Refresh"/>		

Figure 25: Status Screen

Data

Device

Firmware Version	Version of the firmware (embedded software) which is currently installed. Technical support staff may ask for this information.
Physical Address	The hardware address of this device.
Hardware ID	The hardware ID is used by the manufacturer for identification.

LAN

IP Address	The IP Address of this device.
Network Mask	The Network Mask value stored in this device. This must match the Network Mask for the LAN segment to which this device is connected.
Router IP Address	The IP Address of the router. If there is no router, this will show 0.0.0.0.
DHCP	Status of the DHCP Server function. ("Enabled" or "Disabled")
E-Mail Sharing	If E-mail sharing is used on any E-mail account, this will display "ON". Otherwise, the status will be "OFF".
Port	Possible values are "Enabled" or "Disabled", as set on the <i>Advanced Port Settings</i> screen.

DHCP Table

This table will be empty unless DHCP has been "Enabled". If DHCP is being used, this table lists the devices which have been allocated IP Addresses by the DHCP server function. Only IP Addresses in use will be listed.

IP Address	The IP Address which has been allocated by the DHCP server to the other device.
Physical Address	The Physical Address (Hardware Address) of the device which has been allocated a IP Address.
Status	Possible Status values are "Leased" (the IP Address is allocated to the device shown) or "Reserved" (the IP Address is not available).

Port Status/Test Screen

This screen is reached by clicking the *Port Status/Test* link on the *Port Configuration* or *Advanced Port Settings* screens. An example screen is shown below.

Port Status& Test

Status

Physical Link	ON
PPP Link	ON
Serial Line Speed	57600
Phone Line Speed	26400
PPP IP Address	163.31.5.170

Modem Log

020:ppp up successfully
019:start PPP
018:physical line is connected
017:max phone line speed: 26400 bps
016:CONNECT 26400
015:send "ATDT9,4125678 "
▲
▼

Hang-up

Dial

Clear log

Refresh

Figure 26: Port Status & Test

Operation

Select the action you wish to perform, by clicking on the appropriate button.

- **Hang-up** will hang up the modem, if it is currently connected
- **Dial** will dial the ISP, if not currently connected.
- **Clear Log** will remove all data in the *Log* window, making new data easier to read.
- **Refresh** will update the display with the current data.

Status Data

Physical Link	If operating, the link will show ON. This means the modem was able to connect to the number dialed.
PPP Link	If ON, a PPP connection was successfully negotiated.
Serial Line Speed	The connection speed between this device and the modem.
Phone Line Speed	The connection speed over the phone line, between your modem and the number dialed.
PPP IP Address	The IP Address used by this device. This address is provided by the ISP on connection.

Modem Log

This shows the commands sent to the modem, and any status messages returned by the modem. Note that this is not "live"; you must click *Refresh* to update the information.

The following table shows the more common messages, and their meaning.

Message	Description
Dialing	Dialing the ISP
Try to establish physical connection.	The device is trying to connect with the ISP, using the modem.
Busy error	The number dialed was busy.
Physical line is connected	Physical connection to ISP has been established.
CONNECT <i>nnnnnn</i>	Physical connection was successful; <i>nnnnnn</i> indicates the speed of the serial link as currently configured.
Max phone line speed <i>nnnnnn</i> bps	<i>nnnnnn</i> is the maximum speed of the modem, according to the current configuration.
DCD low, DSR low	Physical line break, connection lost.
send "-----" wait "-----"	"AT" commands sent to the modem are displayed as they are sent. Commands in the Script file are also displayed as they are executed.
Start PPP	Having established a physical connection, a PPP connection is now being established.

PPP up fail	The PPP connection could not be established.
PPP up successfully	The PPP connection was established successfully.
Stop PPP	The PPP connection was terminated. This will occur at the end of a session, or an error condition.
Try to hang up	Attempting to get the modem to hang up.
Time out	There was no response from the modem
No carrier No answer	The number dialed did not answer.
Idle timer expires	The time period (in the configuration) to disconnect if the link is not used is up.
No dial tone	The modem could not obtain a dial tone.
Set baudrate nnnn	The serial line speed is being set to the speed set in the configuration.

Normal Operation

The following sequence of messages is typical of normal operation.

```
send "ATDT 0123456789"  
CONNECT 115200  
max phone line speed 28800 bps  
physical line is connected  
start PPP  
ppp up successfully
```

Error Conditions

The following table shows messages which indicate an error condition, and the suggested corrective action.

No dial tone	The modem could not obtain a dial tone. Check your connections on the phone line and the modem.
Busy error	The number dialed was busy. Check that the number is correct. If it is, try dialing later. If this occurs regularly, check with your ISP.
DCD low DSR low	The connection was lost. This could indicate a bad line or poor connection. Normally, if a connection is lost, it will automatically be re-established.
PPP up fail	The ISP rejected the attempt at connection. Check that your username and password is correct. If it is, check with your ISP to see why the connection is being rejected.
Time out	No response. Check that the modem is ON and properly connected to the IP Sharing Device.
No carrier No answer	There was no response from the phone number dialed. Check that the phone number is correct, and the modem is working. If both of these are OK, check with your ISP.

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Appendix A



Troubleshooting

This Appendix covers the most likely problems and their solutions.

Overview

This chapter covers some problems that may arise and possible solutions to them. If you follow the suggested steps and the IP Sharing Device still does not function properly, contact your dealer for further advice.

Problems

Problem 1	Can't connect to the IP Sharing Device to configure it.
Solution 1	<p>Check the following:</p> <ul style="list-style-type: none">• The IP Sharing Device is properly installed, LAN connections are OK, and it is powered ON.• Ensure that your PC and the IP Sharing Device are on the same network segment. (If you don't have a router, this must be the case.)

	<ul style="list-style-type: none">• Ensure that your PC is using an IP Address within the range 192.168.0.2 to 192.168.0.254 and thus compatible with the IP Sharing Device's default IP Address of 192.168.0.1. In Windows, you can check your PC's IP Address by using Control Panel-Network to check the Properties for the TCP/IP protocol.
Problem 2	When I enter a URL or IP address I get a time out error.
Solution 2	<p>A number of things could cause this. Try the following troubleshooting steps.</p> <ol style="list-style-type: none">1. If this is first time you have used your browser, ensure that your workstations IP settings are correct, including IP address, default gateway and DNS.2. Ping the IP Sharing Device. Use the "Run" command to enter the following command: Ping xxx.xxx.xxx.xxx where xxx.xxx.xxx.xxx is the IP address assigned to the IP Sharing Device's LAN interface.3. If the ping command fails, check that the IP Sharing Device is connected and ON. If it is connected and on, there is a problem with your LAN.4. Check that Port is "Enabled" (Advanced Port Settings). If not, you need to use the HTML program to establish a connection.5. Run your Browser and connect to the IP

	Sharing Device. 6. Switch to the <i>Status</i> screen, and examine the Log. For details of the Log messages, see page 96.
Problem 3:	My Modem/ISDN TA is working fine with a dial-up connection through the serial port. How do I find what "Initial String" it is using?
Solution 3	Use the procedure described in <i>Finding the current Initial String</i> on page 106.
Problem 4	Data Transmissions are very slow.
Solution 4	Check and ensure that the Initial String is configured to RTS/CTS flow control.
Problem 5	Some applications do not run properly when using the IP Sharing Device.
Solution 5	<p>The IP Sharing Device processes the data passing through it, so it is not transparent. Some programs may have limited functionality when used with the IP Sharing Device.</p> <p>The number of supported applications is being expanded as rapidly as possible. The following applications and protocols are supported by firmware V5.0:</p> <p>Telnet, FTP, HTTP, ping</p> <p>POP/SMTP, Archie, NNTP</p> <p>TFTP, IRC, Gopher</p> <p>DNS, SNMP, Real Audio</p>

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Appendix B



AT Commands

Required Settings

For the IP Sharing Device to function correctly, the modem or ISDN TA must be set as follows.

Setting	AT Command
Fixed baud rate setting	AT&B1
RTS/CTS flow control	AT&K3
DCD to track the presence of a carrier	AT&C1
DTR off to hang-up modem	AT&D2
DSR always on	AT&S0
Modem to return modem-to-modem data link speed	ATX4 (see Note below)

Note!



- For some Mircocom and other modems, the “ATX4” command is not sufficient - a “W2” command (no “AT”) must be used as well.
- For an ISDN TA, the above commands may not be sufficient. Please check the following section and your ISDN TA's user manual.

For a modem which uses the standard AT commands shown above, the *Initial String* would look like the following:

AT&F&B1&K3&C1&D2&S0X4

The first command (AT&F) sets the modem to the factory defaults, to ensure a consistent starting point.

Finding the current Initial String

If your modem or ISDN TA is already working correctly under Windows 95, using the PC's serial port, you can use the following procedure to find the initialization string.

1. Select *My Computer*, then *Dial-Up Networking*.
2. Select the icon for your connection, then *Properties*.
3. Click the *Configure* button, then the *Connection* tab, as shown below.

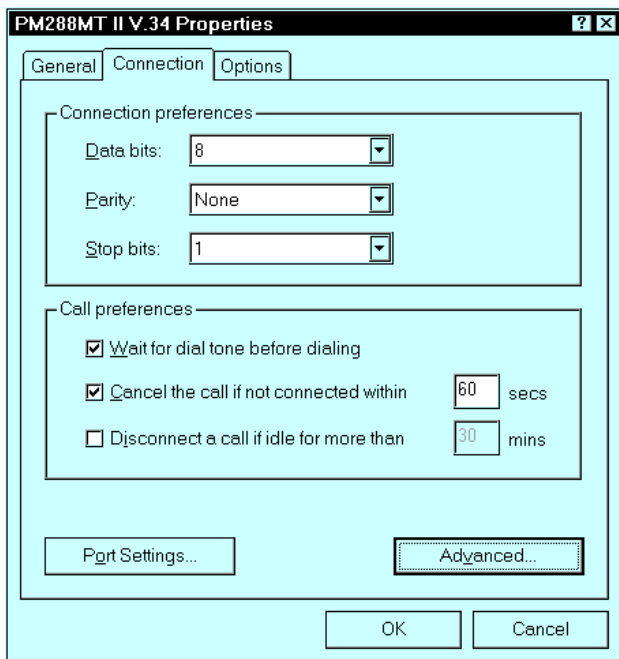
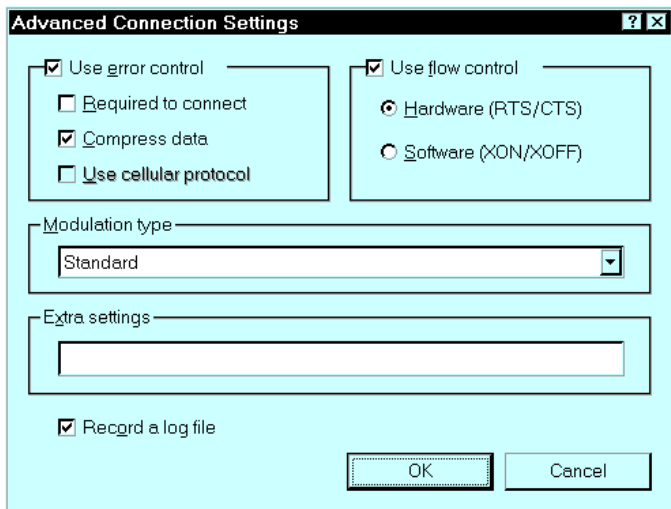


Figure 27:- Connection Properties (W95)

4. Select *Advanced* to see the screen below.

**Figure 28:- Advanced Connection (W95)**

5. Check the option *Record a log file*. Then click *OK* and exit.
6. Use *Dial-up Networking* to make your on-line connection normally. A log file MODEMLOG.TXT will be created in your Windows directory.
7. Use Notepad or another editor to read and print the file MODEMLOG.TXT.
8. Examine the file to determine the *Initial String* value.

AT Commands

Most modems use the standard AT commands, as shown in the following tables. Consult the manual for your modem or ISDN TA to see what AT commands it supports.

Basic AT Command Set

Command		Description
<any key>		Terminate current connection attempt
+++		Escape sequence code, entered in data state, wait for modem to return to command state
ATA		Force answer mode on-line
ATBn		Handshake operation
	B0	Select ITU-T V.22 for 1200 bps communication
	B1	Select Bell 212A for 1200 bps communication
ATD		Dial number and options that follow
	P	Pulse dial
	T	Tone dial
	,	Pause for a specified time
	;	Return to command state after dialing
	!	Hook flash, call transfer
	W	Wait for second dial tone

	@	Wait for 5-second silence before proceeding, otherwise return O ANSWER"
	R	Reverse Dial (Originate a call in answer mode)
ATDL		Dial last number
ATDSn		Dial number stored in NVRAM at position <i>n</i> . n=0-9
ATEn		Command mode local echo of keyboard commands
	E0	Echo off
	E1	Echo on
ATHn		On/Off hook control
	H	Hang up modem
	H0	Hang up (on hook), same as ATH
	H1	Get off hook
ATIn		Display inquired information
	I0	Display product code
	I1	Display product information and ROM checksum
	I2	Link status report
ATLn		Speaker volume control. n=0-7
ATMn		Speaker control
	M0	Speaker always off
	M1	Speaker on until carrier is detected

	M2	Speaker always on
	M3	Speaker on after last digit dialed, off at carrier detect
ATNn		Ring volume control, n =0 disables ring function. n=0-7
ATO		Return to on-line state
ATP		Pulse dial
ATQn		Result code displayed
	Q0	Modem returns result code
	Q1	Modem does not return result code
	Q2	Return result code but quiet in answer mode (will not show in AT&Vn)
ATS0=n		Number of rings required before modem answers. n=0 disables auto-answer.
ATSr.b=n		Set bit b of S-register r to n . (0 or 1)
ATSr.b?		Inquiry bit b of S-register r
ATSr=n		Set S-register r to value n , where n is a decimal number between 0-255
ATSr?		Display value stored in S-register r
ATT		Tone dial
ATVn		Verbal/Numeric result codes
	V0	Display result codes in numeric form
	V1	Display result codes in verbose form
ATXn		Result code options. n=0-7

ATZn		Reset the modem and set power-on profile. n=0-4
	Zn	Reset modem and load user profile <i>n</i> (0-3)
	Z4	Reset modem and load factory settings
AT\$		Help, Basic command summary
AT&\$		Help, Extended AT& command summary
AT*\$		Help, Extended AT* command summary

Extended “AT&” Commands

(Includes RTS/CTS Flow Control Commands)

Command		Description
&Bn		Data rate, terminal-to-modem
	&B1	DTE/DCE rate fixed at DTE setting
&Cn		Carrier Detect operations
	&C1	Carrier Detect tracks presence of carrier
&Dn		Data Terminal Ready (DTR) operations
	&D2	DTR off causes modem to hang up
&F		Load the default factory settings,
&Kn		Data flow control, DTE/DCE, n=0,3,4
	&K0	Flow control disabled
	&K3	Hardware (RTS/CTS) flow control
	&K4	Software (XON/XOFF) flow control
&Sn		Data Set Ready (DSR)
	&S0	DSR overridden, DSR always on

Appendix C

Specifications



SP860A/B

Dimensions	120mm(W) * 86mm(D) * 30mm(H)
Operating Temperature	0° C to 40° C
Storage Temperature	-10° C to 70° C
Network Interface:	Ethernet 10Base2(BNC) 10BaseT (UTP)
Network Protocol:	TCP/IP
Serial Port:	One male DB-9 connector
Max. Asynchronous Serial Line. Speed	230.4 Kbps
LEDs	2
External Power Adapter	9V DC

SP862B, SP864B

Model No.:	SP862B, SP864B
Dimensions	255mm(W) * 140mm(D) * 40mm(H)
Operating Temperature	0° C to 40° C
Storage Temperature	-10° C to 70° C
Protocol:	TCP/IP
Network Interface:	Ethernet 10Base2(BNC) 10BaseT (UTP)
Serial Ports:	錯誤! 找不到參照來源。 - 2 male DB-9 connector 錯誤! 找不到參照來源。 - 4 male DB-9 connector
Max. Asyn. Speed	230.4 Kbps
LEDS	2 general status 1 transmission status for each serial port
External Power Adapter	9VDC